

REMARKS

This application has been amended. In particular, claim 1 has been amended to incorporate therein the limitation previously appearing in claim 10. In addition, the metal oxide has been defined as comprising a plurality of crystallite particles (as opposed to one or more) and the binding location of the inner organic binding group has been clarified. No new matter has been added by these amendments. Claims 10 and 21-49 have been cancelled. Accordingly, claims 1-9 and 11-20 are currently pending. In view of the foregoing amendments and following remarks, Applicants submit that the pending claims are patentable over the cited art of record and are in condition for allowance.

Rejection Based on Cook

Claims 1-9 and 11-20 stand rejected under 35 U.S.C. §102(e) for anticipation by U.S. Patent No. 6,986,943 to Cook. This rejection is respectfully traversed.

Claim 1 is directed to soluble metal oxides. Cook, on the other hand, is concerned with modifying the surface properties of clay and ceramic type materials so that they may be added to a composite material such as a polymer matrix. None of the examples of Cook relate to materials that are metal oxides, but instead relate to ceramic materials such as boehmite, montmorillonite and iron oxyhydroxide.

Applicants also respectfully disagree with the characterization in the Office Action that the anchor group in Cook is attached to a metal moiety of a metal oxide in a manner similar to that defined in claim 1. Claim 1 defines a metal oxide comprising metal and oxygen moieties. The inner organic binding group is attached to at least one metal moiety – that is, the metal moiety which is part of the metal oxide. Claim 1 has been amended to clarify whatever confusion there was on this point. In Cook, however, the surface of the alumina particle is converted to boehmite before anything is attached to the surface of the particle. Subsequent attachment of the anchor group is thus not attachment to a metal moiety of a metal oxide. Rather, the anchor group is attached to a non-metal oxide (boehmite) layer which is on an alumina material.

Notwithstanding the foregoing, and in order to advance prosecution of this application, claim 1 has now been amended to define the metal moieties of the metal oxide as being selected from tin and titanium. Cook does not teach or suggest this limitation since, as discussed above, Cook is directed to clay and ceramic type materials. Indeed, the Office Action did not reject claim 10, which depended from claim 1, as being anticipated by Cook. The Office Action similarly did not reject claim 21, which also defined the metal moiety as selected from titanium and tin, based on Cook. The limitation of claim 10 has now been incorporated into claim 1.

Thus, Applicants respectfully request that the rejection of claims 1-9 and 11-20 be reconsidered and withdrawn.

Rejection Based on Diebold

Claims 1-21 stand rejected under 35 U.S.C. §102(a) for anticipation by the article authored by Ulrike Diebold entitled "The surface science of titanium dioxide." This rejection is respectfully traversed.

The lengthy Diebold article provides a review of the properties of TiO_2 in its mineral form rutile. (See Diebold, Abstract.) Diebold is silent regarding the issue of providing a soluble form of a metal oxide. Diebold focuses only on titanium, and is silent in respect to other metals such as tin. Significantly, Diebold is concerned with observing the properties of a single crystal system. In order for a single crystal system to be observed, the single crystal must be present both before and after modification. Otherwise, observation would not be possible. For this reason, it is apparent that whatever surface modification takes place, the single crystal remains. The single crystal is not in a soluble metal oxide form as required by claim 1 of the present application. Moreover, Applicants have amended claim 1 to further define the claimed soluble metal oxide as comprising a plurality of metal oxide crystallite particles.

Furthermore, the Office Action asserts that Diebold discloses inner or outer organic binding groups as defined in claim 1, citing Table 16 of Diebold on pages 171-190. However, Diebold contains no such disclosure. Table 16 of Diebold relates to microscopy studies and computational modeling studies (among others) to determine if the organic acids

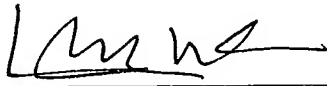
attach to the TiO₂ particle by dissociative adsorption and to calculate minimum energy conformations of the organic adsorbants on TiO₂. This disclosure is silent as to a soluble tin/titanium metal oxide particle having a first inner organic group attached to at least one metal moiety of a tin/titanium metal oxide crystallite particle and a second outer organic binding group attached to the first inner organic binding group as recited in claim 1 presented herewith. Diebold as a whole does not disclose a soluble tin/titanium metal oxide having the specific arrangement of inner and outer layers. Applicants' invention, as defined in claim 1, provides a novel product in the form of a soluble metal oxide that is not taught or suggested by Diebold.

Therefore, Applicants respectfully submit that the pending claims are patentable over Diebold and the outstanding rejection of claims 1-21 under 35 U.S.C. §102(a) for anticipation by Diebold should be reconsidered and withdrawn.

CONCLUSION

For the foregoing reasons, Applicants submit that the pending claims are patentable over the cited art of record and are in condition for allowance. Accordingly, reconsideration of the outstanding rejections and allowance of pending claims 1-9 and 11-20 are respectfully requested.

Respectfully submitted,
THE WEBB LAW FIRM

By 
Kirk M. Miles
Registration No. 37,891
Attorney for Applicants
436 Seventh Avenue
700 Koppers Building
Pittsburgh, PA 15219
Telephone: (412) 471-8815
Facsimile: (412) 471-4094
E-mail: webblaw@webblaw.com